

Executive Summary - Vision for Information Technology

Vision for Information Technology

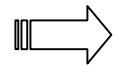
More than 80 state agencies created and submitted information technology plans in an effort to provide better information about the direction of technology within their agencies. These plans were developed, for the most part, independently. The statewide plan now brings the agency plans together and also provides an overall vision for technology within state government.

State agencies ordinarily serve a particular function, such as building and maintaining highways, regulating water and mineral resources, determining eligibility for economic assistance, or delivering educational services. These functions generally have little in common, and the diversified business requirements generate different needs for supporting technology. However, four common threads emerge when viewed from a broader perspective.

These general components form the nucleus of the statewide vision for information technology.

- **State government should be customer focused.**
- **State government should be efficient.**
- **State government should be well managed.**
- **State government should provide the leadership for developing a shared infrastructure.**

The purpose for having a statewide vision for information technology is to provide a common direction for coordinated efforts. State agencies will use the vision as a basis for preparing their future information technology plans. By working together, we will achieve our goals faster and more efficiently. The vision will also provide decision-makers with criteria for evaluating technology projects and funding initiatives. While the vision does not provide specific spending priorities, it does provide a basis for evaluating projects. Each individual project should move the state closer to its overall vision.

 **State government should be customer focused.**

State government can no longer do business the way it did twenty or thirty years ago. This is not simply because of changes in regulations or programs offered. The primary difference is in customer expectations for service delivery. It is now possible to shop on the Internet or order by phone 24 hours a day. Bills are paid electronically, eliminating the check writing and processing time. ATM machines provide 24 hour a day teller service at convenient locations. Entertainment can be delivered by a cable company simply by making a phone call. Health care services are offered to remote locations via video conferencing, eliminating travel time. Citizens now expect the same types of convenient services from government that they receive from private industry.

Customers want services that are delivered to a convenient location and offered at times that fit their schedules, i.e. any time, anywhere. They also want routine transactions to be self-service so they don't have to wait in line. But, when they do need additional assistance, they want fast access to a knowledgeable person. They also like the idea of the "shopping mall", where they can find everything they need at one location. Expanded use of the Internet and web browser technologies will provide access to information and applications from virtually anywhere - homes, libraries, offices, schools, even vehicles. Video conferencing will extend services to remote locations and interactive voice response systems will turn a telephone into a simplified computer terminal. These technologies will play a key role in improving customer service throughout state government in North Dakota. Technology will help remove distance barriers and provide education, health care and other government services to rural areas.

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State agencies will begin implementing applications that will accept electronic payments for taxes, license fees and other government services. The Tax Department has already begun the process of moving certain tax types to electronic filing formats and will continue to expand its capabilities for electronic tax filing. The Bank of North Dakota is planning to provide

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electronic commerce services to its customers in the future. The Secretary of State's office is currently implementing technology that will allow businesses to electronically file and search for information via the Internet, eliminating the dependency on office staff, and the associated wait time, to fill requests.

In the area of education, Online Dakota Information Network (ODIN) provides public access to library information and research materials of its 40+ member libraries. ODIN plans to replace the current system with the next generation technology, expanding access and making the system easier to use. North Dakota University System is also planning to replace its current financial, student information and human resources/payroll systems with an integrated system that will provide improved service to students, employees, policy makers and vendors. Online admission, registration and bill paying processes are becoming essential to attract and retain students. Demand and availability of distance education courses is also growing as students look at alternatives to full-time on-campus enrollment.

The Department of Human Services and Job Services North Dakota have reengineered their processes to create a single point of contact within each agency for multiple programs and services. Customers no longer have to contact a different person for each program. Human Services is in the process of implementing a system called Training, Education, and Employment Management (TEEM). This system supports welfare reform and provides a single delivery system that can be used to provide information to clients. Job Service clients can apply for and receive services at local Job Services North Dakota offices, at home by phone or through the mail. The Job Service web site provides job listings and labor market information, again, providing multiple services at a single location, at the place and time convenient to the customer.

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adding features such as electronic forms filing and electronic payment

The State of North Dakota web site will eventually become the "shopping mall" for state government information and services. The state web site currently has links to over 45 individual agency web sites. These sites are constantly being enhanced and agencies will be

processing. Many businesses are currently connected to the Internet and are driving the requirement for government Internet services. The expansion of Internet usage into the home market in the next five to ten years will drive the demand even further. The web page developed by the legislative branch is a good example of access to government information such as legislative contact information, minutes and journals, and bill text. The judicial branch has made available opinions and rules, as well as general information about the North Dakota legal system on the Supreme Court web site. Citizens will have opportunities to be informed and involved as never before.

⇒ State government should be efficient.

Data processing applications have traditionally provided for efficiencies in the processing of information. The automation of repetitive clerical tasks, especially accounting functions, formed the original justification for computerization. In the past, because of limited access to technology, data processing activities were performed by specialists with terminals on their desks. Data entry clerks entered information from paper forms into the computer. Standard paper reports were furnished, not necessarily read, on a regular basis. Anything out of the ordinary had to be requested from a programmer/analyst. Because of limited access to the data and slow turn around times, duplicate or "shadow" systems were developed by users.

At this point, virtually every state office employee has access to a computer. In addition, vendors, customers, business partners and local government agencies also have computers with network access. With the wide spread adoption of the personal computer and network access, additional efficiencies can be gained beyond the use of the computer as an adding machine. By moving data

entry tasks closer to the source, the processing of paper forms can be simplified or eliminated. By giving users tools and training to do ad-hoc reporting, the programming staff can be freed to tackle larger projects. New technologies, such as e-mail and electronic signatures, make it possible to



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automate the work flow processes and share information as never before. This results in faster turnaround time for processing payments, claims, time sheets, and requests for information. In the end, the efficiencies provided by technology will reduce wait times and improve response times for customers.

Most state agencies have automated clerical tasks in their offices and realized the savings possible through traditional data processing applications. Gaining further efficiencies by automating workflow within the agency will require changes in their business processes and changes in the job description of the employees. Implementing these changes demands management involvement and commitment as well as technical know-how. Several agencies are well on their way to extending automation into the business processes of their organizations. Workers Compensation implemented a claims imaging/work manager system that significantly reduced the claims processing time. They also automated the payment process to medical providers, eliminating paper bill entry and filing for an average of 1,500 bills per month. The Highway Patrol, in conjunction with State Radio, is piloting a program to put mobile data terminals into patrol cars. Officers will be able to directly access public safety databases without involving a dispatcher. Eventually officers will be able to generate electronic crash reports, eliminating redundant data entry at the Department of Transportation and allowing officers to spend more time on the road instead of in the office filing paper work.

Technology can make government more efficient by faster processing and reducing turn around time, but it also produces efficiencies indirectly by providing management with the knowledge to make decisions within the organization. Executive information systems, decision support systems, geographic information systems and data warehouse technology take the information from within data processing applications and turn it into knowledge. Managers are then able to see at a glance where there may be cost overruns, scheduling problems, potential for cost savings or trends that may have an impact in the future. These tools allow the user to drill down into the data to find the source of a problem. “What if” analyses and projections can help managers take a proactive role in avoiding obstacles.

The technology required to implement these types of systems includes relational database management systems designed around the relationship

between the data rather than the input forms; an easy to use graphical user interface; and a suite of software tools. In addition, employees at all levels must be trained as “knowledge workers” who understand the data and the technology needed to access it. North Dakota University System plans to move to this next generation of information systems when it replaces its current financial, student information and human resources/payroll systems. Workers Compensation is considering a data warehouse application to assess performance data. At some point in the future the state accounting system and human resource systems will be considered for migration to newer technology which will support better decision making at the state level while providing the detailed tracking needed at the agency level.

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State government should be well managed.

While technology expenditures represented only about 4.6 percent of total state spending in the current biennium, the impact that those dollars have on the way agencies operate is tremendous. It is critical that information technology is well managed to get the most from the limited dollars available. While hardware costs are decreasing, the requirement for additional processing power is increasing. The demand for qualified technology personnel is also increasing, putting pressure on salaries and training costs. Constant change in the technology industry presents many opportunities but also a number of challenges. Better planning, better project management, better asset management and adequate staffing are essential for state government to use technology successfully in the future.

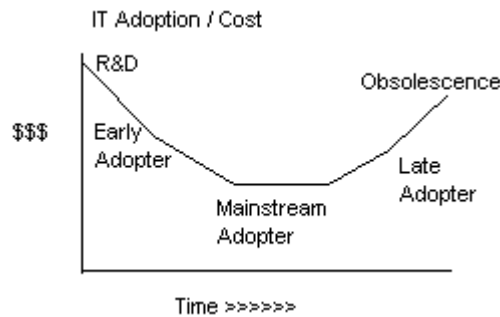
Eighty-five percent of the agencies responding to a survey viewed the planning process as somewhat to very useful.

Planning is the first step in good technology management. 1998 was the first year that state agencies were required to submit information technology plans. Prior to that, only 21 agencies had developed technology plans.

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Eighty-five percent of the agencies responding to a survey viewed the planning process as somewhat to very useful. The technology planning process will continue to improve by automating the data gathering system, collecting more relevant data, and putting a greater emphasis on strategic rather than tactical planning. As future plans are collected trend data can be analyzed to better project future staffing and budget requirements.

One of the challenges to good technology planning is the pace at which technology is changing. It is difficult to predict the future technologies



coming out in six months, much less six years. When new technologies do come out they tend to be expensive and unproven. On the other hand, failing to adopt newer technologies can also be expensive. By hanging on to outdated equipment or software, maintenance costs increase, support is non-existent and user frustration

risks as down time becomes common place. To reduce costs, agencies should plan on replacement cycles, which will keep them in the technology "mainstream".

As computer processing has migrated from a large, centralized mainframe to hundreds of distributed desktop computers, the management challenges have increased. Each agency must now track the equipment they have, schedule upgrades, track software licenses and trouble shoot user problems. The responsibilities have shifted from coordinating dumb terminal connections with ISD to managing a sub-network and the associated upgrades. Industry advancements mean that a PC purchased today will be verging on obsolescence in three years. New versions of packaged software generally come out annually with bug fixes available in between. While some agencies are doing an excellent job, other agencies are just beginning to understand how to manage these processes. In the future, agencies will be asked to identify more specifically their replacement and upgrade schedules as part of the planning process. Best practices for managing local area networks will be shared across agencies. Automated tools for upgrading software and

tracking inventory will be evaluated. Networked PCs and thin clients will also be evaluated as a low cost alternative to personal computers for some applications.

Information technology standards and policies are a key component of good technology management. The standards describe the technological infrastructure that is necessary to support the enterprise vision for information technology. State standards and policies have been developed during the current biennium for operating systems and platforms, applications development, office automation, data management, network services, security, document imaging, and video conferencing. These standards and policies will continue to be expanded and refined as technology changes. These standards will provide a guide to information technology decision-makers and reduce costs by providing consistency across state government. Because a limited number of options are accepted, support costs will be reduced. Interoperability among state agencies and with stakeholders outside state government will increase. Economies of scale will result in lower costs for hardware, software and training services that can be purchased in higher volumes. State contracts already exist for PCs, network equipment and long distance services. Additional state contracts or licenses will be negotiated for standard products when it is cost effective to do so.

State standards and policies have been developed during the current biennium for operating systems and platforms, applications development, office automation, data management, network services, security, document imaging, and video conferencing.

North Dakota has developed its standards and policies with the idea that standards apply not only to

| Name | DUR | AUG 23 | AUG 30 | SEP 5 | SEP 12 | SEP 17 | SEP 24 | SEP 30 | OCT 6 |
|-------------------|-----|--------|--------|-------|--------|--------|--------|--------|-------|
| Go Ahead | 0W | ◆ | | | | | | | |
| Manage Progress | 8W | | | | | | | | |
| Select Computers | 2W | | | | | | | | |
| Select Software | 3W | | | | | | | | |
| Purchasing | 2W | | | | | | | | |
| Write User Manual | 2W | | | | | | | | |
| Install | 2W | | | | | | | | |
| Train Users | 1W | | | | | | | | |
| Dry Run/Sys Test | 2W | | | | | | | | |
| Acceptance | 3W | | | | | | | | |

specific technologies but that best practices for implementing and managing technology should also be included along with standards for specific

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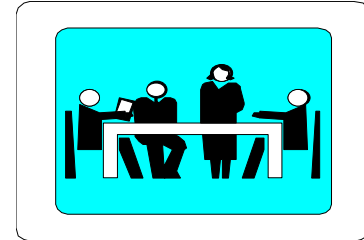
technologies. One of the biggest needs for best practice standards is in the area of project management. Project management policies are being developed so that all state agencies will consistently adopt practices that increase the chances of project success. A project management curriculum and training program will be developed and implemented in the next biennium so project managers can develop the skills required to develop and control project scope, budget and schedule. Procedures for project oversight on large projects will also be developed and implemented in the 99-01 biennium. Independent quality assurance reviews will be recommended for high profile projects to insure that project objectives are met.

Management of network security is also becoming a critical issue. As Internet access, electronic information sharing and electronic commerce become common place, the state needs to be sure that the proper security measures are in place. Policies regarding security have been adopted to ensure that confidential data will not be compromised and proper controls will be put in place to limit access as required. Encryption standards are currently evolving in order to stay ahead of code breaking schemes. The use of digital signatures is being reviewed for potential use by the several agencies. These technologies, and others that may evolve, will be implemented when appropriate to safe guard confidential information and ensure the integrity of computer systems and data.

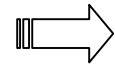
Regardless of the standards and policies in place, technology will not be well managed without the ability to attract and retain knowledgeable, qualified staff. Projects cannot be completed on schedule if key positions are vacant. The use of contractors to fill staff shortages can increase costs by as much as two hundred percent. A nation wide shortage of information technology professionals has not bypassed North Dakota. State government agencies, much like private industry, are seeing higher turnover rates and a lack of qualified applicants for technology positions as salaries lag behind the market. A two pronged approach should be implemented to combat this problem.

First, salaries for state government technology positions should be reviewed and a plan developed for moving those salaries closer to market rates. Agencies should be given the flexibility, similar to that available in other industries, of offering hiring bonuses or other bonuses for project

completion, or performance. This would impact agency budgets, but would not result in the same long term dollar commitment required by raising base salaries. Second, the state should work with higher education and private industry to develop and promote meaningful technology training. This will increase the number of qualified people available by retraining those with outdated skills and training non-technology staff for technology positions.



User training and support must also be considered. Each technology change brings a need to retrain users. Projects do not end with the installation of a new computer or new software, but rather when users are capable of fully utilizing the tools at their disposal. User training should not be an afterthought but rather an important component of each agency's technology plan.

 **State government should provide the leadership for developing a shared infrastructure.**

One of the traditional roles of government is to provide, through tax dollars or fees, an infrastructure to benefit society as a whole. For example, highway maintenance is funded through tax dollars rather than usage fees because everyone benefits and it is difficult to assign costs based on usage. Similarly, public education benefits society as a whole and is funded and regulated by government. Government has traditionally regulated fees charged by public utilities to ensure that higher "last mile" expenses are absorbed by a larger customer base thus making access to services affordable regardless of location. This model also applies to the "information highway" and technology services.

A rural state like North Dakota must actively promote the extension of technology into distant, sparsely populated areas to provide opportunities in economic development, education and health care. The state has provided grant funding to the Educational Telecommunications Council to fund

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state to be upgraded from analog to digital technology within the next decade. State government will be asked to partially fund related infrastructure upgrades for State Radio and Prairie Public TV.

North Dakota has long been a leader in the establishment of a single wide area network for state government and higher education. The North Dakota Information Network executive committee coordinates networking services between state government, higher education, K-12 school districts and county governments. Contracts for networking services are negotiated at the state level increasing negotiating leverage due to higher volumes. Through

distance learning projects and Internet access. The federal telecommunication act of 1996 established the e-rate program to shift revenues from telecommunications companies to technology projects for rural and low-income schools, libraries and medical facilities in an effort to equalize access to technology. Federal Communications Commissions mandates will force radio and television facilities in the

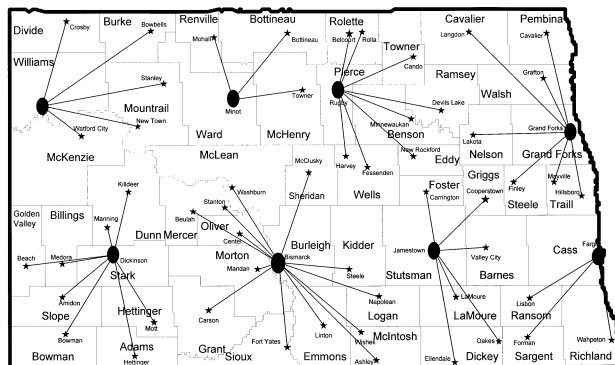
the use of standards and fewer subnetworks, the complexity of the network decreases, which in turn reduces down time and support costs. Network applications such as e-mail and web site hosting are also available to state agencies through this centralized approach.

North Dakota has not created its own private network but rather provides connections to the transport facilities of telecommunications companies, creating a “virtual” network. This has reduced the capital expenditures required to implement the network and provides for flexible expansion. In addition, the state acts as an anchor tenant who can encourage telecommunications providers to deploy new technology in North Dakota. These technologies are then available to private industry and other entities in the state as well. State government will continue to work with telecommunications companies to facilitate deployment of affordable network services throughout the state. The need for additional capacity will grow exponentially as more services are offered over the Internet. Upgrades to the network will be done on an evolutionary basis when demand for the service justifies the cost. Agency technology plans will be used to provide an indication of future demand, and bandwidth will be monitored to ensure adequate service levels.

In addition to networking services, the Information Services Division provides a central computer center, systems development and technical support. The central computer center makes the fast, highly reliable processing of the mainframe available to small and large agencies without duplicating the costs of the equipment and support staff. The skills of programmers, analysts, LAN administrators and desktop support technicians are available to develop and maintain agency systems and subnetworks. This extends the limited resources within agencies and provides services on an as needed basis at a reasonable cost.

State government offers many of its services through other distribution channels such as county governments, school districts and other political subdivisions. As more and more services are delivered electronically or with the use of technology, these partners are effected. Planning is required to ensure that they have the budgets and training necessary to use the technology promoted by state agencies. In some cases, the functions performed by these partners may be eliminated, changed or expanded. It is critical that state government agencies work through the business issues

North Dakota Information Network
(cities connected)



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related to technology changes with the political subdivisions. State agencies will need to share their technology plans with the political subdivisions so that they can also plan required upgrades and train staff. The Information Services Division will continue to play a coordinating role to identify and resolve these issues.

Conclusion

This is the first statewide information technology plan and will be updated each biennium. The planning process will be an iterative one, improving and evolving as we learn from our successes and mistakes. State agencies have been extremely cooperative in meeting the challenges of this first required planning effort. Coordination among Information Services Division, the Legislative Interim Committee on Information Technology and the Office of Management and Budget has been critical during the development of the planning process during this first year. As we continue to build these relationships the planning process can only improve. This first planning endeavor has proven to be very valuable in establishing a baseline and gaining a better understanding of the state's investment in technology. The state will see additional benefits as we move toward a shared vision in the future as technology is used to improve customer service, improve the efficiency of state government, better manage scarce resources, and continue to build an infrastructure for information sharing.

